

Applicati n No.: 10/091,945

Docket No.: JCLA6897

REMARKS**I. Present Status of the Application**

The Office Action rejected claims 1, 7, 8, 10, 13 and 14 under 35 U.S.C. § 102(e). The Office Action has been carefully considered. No amendments are made to the application, and claims 1, 7, 8, 10, 13 and 14 remain pending in the present application. Applicants believe that this reply does not introduce new matter. Reconsideration of those claims is respectfully requested.

II. Response to rejections under 35 U.S.C. § 102(e) over Mihara

The Office Action, at pages 2-4, rejected claims 1, 7, 8, 10, 13 and 14 under 35 U.S.C. § 102(e) as being anticipated by Mihara (JP 2000-332160). Applicants respectfully traverse the rejections for at least the reasons set forth below.

The Applicants' invention provides a cavity down ball grid array packaging structure comprising a heat spreader, a ground substrate, a patterned wiring layer, and a via. As recited in the independent claims 1 and 10, the structure has certain features that "[the] ground substrate bonded onto the heat spreader" and that "the patterned wiring layer comprises at least a ball pad, a first contact pad, and a first ground pad spaced apart from and electrically connected to the via" (emphasis added).

However, Mihara does not teach these two features. When describing a ball grid array integrated circuit package (Fig. 8; "laminating PBGA," paragraphs [0009] through [0017]),

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Mihara discloses that the package is formed with laminating of insulating layers (Fig. 8, item 221) and the patterned wiring layer (Fig., item 233) between the ground substrate (Fig. 8, item 231b) and the heat spreader (Fig. 8, item 203). In the structure, the ground substrate is not directly bonded onto the heat spreader, which is substantially different from the present invention as recited in claims 1 and 10.

Furthermore, as Examiner states in the Office Action, Mihara discloses that the via is formed "underneath [the solder ball] 205 (Office Action, page 2, paragraph 3, lines 6-7; Fig. 8, "through hole," not labelled, underneath item 205). As recited in claims 1 and 10, however, Applicants' invention is provide that the via is "spaced apart from" the ground pad which is under the solder ball, i.e., the via is spaced apart from but not underneath the solder ball. This is an important feature of the Applicants' invention for controlling height difference between the solder balls formed in the structure. Apparently, Mihara fails to disclose such an important feature of the Applicants' invention.

Therefore, neither claim 1 nor claim 10 is anticipated by Mihara since Mihara fails to disclose each and every element of the claims. In view of the foregoing, claims 7, 8, 13 and 14 are consequently not anticipated by Mihara since claims 7, 8 are dependent upon claim 1 and claims 13 and 14 are dependent upon claim 10.

Accordingly, Applicants respectfully submit that the grounds of rejections have been addressd and the rejections overcome. Reconsideration and withdrawal of the rejections are respectfully requested.

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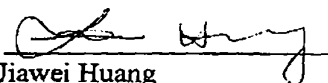
CONCLUSION

For at least the foregoing reasons, it is believed that the pending claims 1, 7, 8, 10, 13 and 14 are in proper condition for allowance. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

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